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THE Inspectors of Buildings in Philadelphia and the Superintendent of Buildings of Chicago have submitted reports of their examinations of the theatres and halls in their respective cities. In reading over the Philadelphia report we were convinced that sight-seers in that city must lead more precarious lives than in any other of the country; but the conviction was shaken when we read the report from Chicago. The Philadelphia theatres are noticeable for the large number of spectators that are seated in the upper galleries, and the provision of stairs is in many cases exceedingly niggardly. In the Academy of Music the upper tier seats 776; in the Grand Central Theatre, 1,000; in the Walnut-street Theatre, 800; the Arch-street Theatre, 700 to 800; Fox's, 1,000 to 1,500; the New National, 1,000. They seem on the whole better equipped with fire apparatus than those of Chicago, despite the pride of Chicago in its new water-works. The Academy of Music is one of the best planned for security in the country, perhaps quite the best. It is exposed on three sides, and has twenty exit-doors. A two-foot brick wall, running up through the roof into a fire-parapet, divides the stage from the auditorium; a similar wall separates the auditorium from the lobbies. The carpenter's shop and scene dock are also cut off by brick walls and iron doors. The stairways are in brick wells; the ceiling of the auditorium is framed in iron and plastered upon iron netting. There are no wooden partitions in the building, and no fires are used. The heating is by steam introduced from without, and the lighting by electricity. Each tier is emptied into its corridor by twelve doors, and each has its two independent stairways of good width leading to separate doors on opposite sides of the building; the dressing-rooms on the stage having also their independent staircases four feet wide on each side.

FOR difficulty of escape, on the other hand, perhaps Fox's Theatre bears the bell. Here the auditorium, which seats three thousand "but will accommodate five thousand," is sixty feet back from its only entrance. The floor of the house discharges nearly seven hundred people into a lobby eight by thirteen and a half feet, from which they escape into a main corridor thirteen and a half feet wide and fifty-two long, leading to the street. Into this lobby also the three hundred spectators from the first tier descend by two stairs of three feet four inches wide. Of the four or five hundred in the second tier, one half are brought by a staircase into the corridor of the first tier, whence they too are poured into the lobby below; and the other half are delivered by a separate staircase into the main exit corridor beyond the lobby. Finally, from one thousand to fifteen hundred from the third tier come down by a single stairway four and a half feet wide to join these on the equal staircase of the second tier; and the whole mass is brought together in the long corridor below. Other cases not greatly better are reported in Philadelphia. Among the first half-dozen theatres described in the Chicago report, we notice that three have absolutely no fire-plugs; one has seven water-buckets, one four, and the other none. In two the carpenter's shop is over the ceiling of the auditorium; in two, on one side of the flies. The theatres, if not so insecurely planned as the worst of those in Philadelphia, have very little to boast of. The lessons of the great fires seem to have been but little heeded in building them, and we do not read of any fire-proof construction. The general conclusion from all the reports that are rendered would seem to be that the theatres in the country which do not actually endanger their audiences might be counted on one's fingers.

THE accounts now given of the Strakosch Opera-House project differ materially, as was to be expected if it were to be carried out, from the first announcement. It is said that a lot has been bought for it in the block between Forty-third and Forty-fourth Streets and Madison and Vanderbilt Avenues, on which a building of one hundred and twenty-five feet by two hundred is to be built, Italian Renaissance in style, from the designs of Mr. Arthur Gilman. From the description that is given of the plan in the *Evening Post*, it appears that the lessons of the Brooklyn disaster are not neglected. It is promised that the building shall be of fire-proof material, with brick partitions, floors of iron and concrete, a roof of iron, with a metal ceiling over the auditorium, and stairs of iron and stone. There are also promised abundant exits in front and on the sides. The dimensions announced for the auditorium are identical with those of the theatre of La Scala at Milan, — one hundred and five feet deep from the curtain to the back of the boxes, eighty-seven feet wide from back to back of boxes, and sixty-five feet high. The arrangement of the auditorium, too, is essentially Italian, except for the standing-room in the pit, which we may assume will not be reserved. There will be five tiers of private boxes (at La Scala there are seven), making three hundred in all, of which a third are to be distributed by lot among the one hundred shareholders, leaving two hundred to the public. Behind the fifth tier of boxes, and looking over it, is to be an amphitheatre with seats for five hundred persons. On the floor of the house are to be six hundred and fifty so-called orchestra-stalls, which must of course occupy the whole *parterre*. The number of seats thus provided is about three thousand, — quite as many as can be satisfactorily placed in a theatre, perhaps rather more, but two thousand less than was at first proposed by Mr. Strakosch, according to the published account of his plan.

THE return to the European arrangement of separate boxes may be considered an experiment. These were introduced in older theatres of the United States as a matter of course, but were not found profitable, and have been almost universally given up in favor of the system of open galleries, which suited better with the simple ways of our people. How far the more luxurious habits of the present day will warrant a return to them, remains to be seen. A feature which we believe to be entirely new in American theatres is the introduction of rear-boxes, or rather small *salons* assigned to the separate boxes, after the Continental fashion. These are places of luxury for spectators when they wish to exchange the view of the stage and the audience for a quiet talk or an unnoted flirtation. But in the plan of the New York house, as we understand it, these *salons* are not arranged, as in the New Opera and one or two of the older theatres in Paris, directly behind the boxes and *en suite* with them, but across the box corridor, which therefore isolates them from the boxes to which they belong. This position, which is the customary one in the great theatres of Italy, leads there, we believe, to their being usually deserted, or used only as receptacles for cloaks and galoshes. We presume, by the way, that Mr. Strakosch no longer expects to open his house on the first of January, 1878.

WE have received the bulletins for November and December of the Metric Bureau, an association in Boston of persons who are interested in the adoption of the metric system, the object of which is to further the system by spread of documents which advocate and explain it; and by publications, public addresses, and direct solicitation, to push its claims wherever there is opportunity. We have also the report

rendered to the Boston Society of Civil Engineers by the Standing Committee appointed to consider and press the adoption of the system in the United States, which gives facts and suggestions of interest. The committee record that the Diet of Sweden has voted to adopt the metric system, but very cautiously has postponed the date of its compulsory use to 1889. This is giving plenty of time for preparation, and for adapting the whole system of public instruction to its use; and means, in fact, to really accomplish the change before the time of compulsion. But the committee add that the reports of Swedish manufacturers and mechanics indicate that three or four years will bring the system into general use. Russia too, they say, is preparing to follow. By order of the society a circular letter has been addressed to a large number of societies in the United States, inviting them to unite in laying before Congress a memorial for the introduction of the system; out of twenty-nine answers received, sixteen were in favor of it, eight undecided, and five opposed.

THE fact seems to be that there is a gradual and steady, more or less unconscious, change going on in the minds of the people of the country, which is preparing them to in due time accept the change as a matter of course, and at last with comparatively little serious opposition, provided the movement is deliberate enough. That it will come sooner or later is hardly to be disputed, and it is likely that it will not take many years. The obstacles will be the inertia of people who know nothing or care little about it, and the active opposition of machinists and manufacturers who, as we took occasion to say some time ago, dislike it on account of the change it requires in their tools and machinery. We are told in the report that already the American Watch Company uses the metrical standard exclusively, and, what is a natural consequence perhaps, that the American Watch Tool Company does the same. A manufacturing company of Hartford, Conn., writes, "We think that if manufacturers would begin at once to make new tools, using the old until worn out, a change could be brought about with little loss and not much more trouble than is now experienced from variations in measures." On the other hand the Franklin Institute of Pennsylvania, though it believes in the adoption of a universal system, declined to favor a compulsory change, and adopted a report of its committee that the objections to the metre were "overwhelming." We infer that the Institute would have the mountain come to Mohammed, and the world adopt the foot as the universal unit. The American Academy of Arts and Sciences postponed the matter indefinitely. Meanwhile the movement in its favor is gaining a foothold in the schools and colleges, which is a great vantage-ground. It seems to be strongest in the East and in the West, and to find its chief opposition in the Middle States. The theoretical objections that are urged against it are mostly beside the mark. Thus the committee of the Franklin Institute and others argue that a decimal division of the foot would be more convenient, forgetting that the universal adoption of the foot is utterly hopeless. We read a short time ago in an English journal, a passage which was, we believe, a fair representation of the English conservative view, and which said among other things what has often been said, that for the daily uses of trade a binary subdivision was most convenient. This is true, no doubt, and that it is not incompatible with the decimal division is shown by our own division of the dollar. It was also argued, as is again common, that the decimal notation itself is as arbitrary as any other, and that in arithmetic a duodecimal notation would be much more convenient. This may be true, though we are inclined to doubt it; but it has nothing to do with the question. The idea that the world could be led at this point to give up the decimal notation, and adapt every thing to another, is chimerical. The only practical question is of the ultimate convenience of the change. Of that the best means of judging is the experience of those who have made it; and we do not hear of any nation that has done this and regretted it. It is doubtful if any perfect system could be devised; but it will be an immense advantage when a convenient system comes into universal use which not only adapts itself to the received notation, but includes a simple correlation of all the different units in use, whether in linear measure, square measure, solid measure, weights, or currencies; and at the point which the civilized world has now reached, there is apparently no hope of this but in the metrical system.

A SCHEME which has been more than once proposed, of heating a town by steam, is actually to be put into practice, it appears, in Lockport, N.Y. A Mr. Holly has arranged a plan for carrying steam to houses throughout the city in pipes, and supplying it to consumers like gas. A stock company has been formed to carry out the plan, and the experiment is to be tried in a section of half a mile square, that being the area which it is thought practicable to supply with one set of boilers. Estimates have been prepared which show, it is said, that the first cost of the works and pipes for such a district will hardly be more than a third of the cost of heating the houses in it for a year in the ordinary way. There can hardly be a doubt of the practicability of the scheme. Embarrassments will have to be met, — the loss by convection of heat from the pipes, the disposal of the water of condensation, and the like, — but no difficulties so serious as had to be overcome when gas was first introduced. Experience has shown that steam can be economically carried for considerable distances under ground; and Mr. Holly is convinced that in pipes wrapped with asbestos and enclosed in wood, it can be distributed without serious loss. The necessity of supplementary boilers is obvious, and it is doubtful, we should think, whether it would be found desirable to use the same supply, that is, the same pressure, for heating and for power; but these are questions of detail. Now that we have ceased to regard an open fire as any thing more than a luxury to be added to whatever unseen heating-appliance is our main dependence, the question of heat becomes exclusively one of convenience and economy. It is fortunately not likely that any convenient contrivance will again lead us to close all our chimney-flues as they were closed thirty years ago, and leave ourselves with only one string to our bow. If the experiment succeeds it will unquestionably become popular by virtue of its saving of household labor and dust in the management of fire, to say nothing of the likelihood that gradually means will be invented of using the motive as well as the heating power of steam for household services. There is the danger that a people who, in spite of the doctors, do not much wish to be ventilated, will be tempted more than ever to condemn themselves to close houses; but we have a powerful antidote in the present temper of physicians and other "sanitarians," and the people who have a Malthusian dread of the exhaustion of coal and petroleum will gather comfort from any thing that promises to spare our supply of fuel. On the whole we may be thankful to anybody who has the spirit to try for us so interesting and so promising an experiment.

METHODS OF VENTILATION.

[Report on Methods of Ventilation, read at the third Annual Convention of the American Public Health Association at Baltimore, by Carl Pfeiffer, Consulting Architect of the Health Department, New York.]

Mr. President, — In reporting upon the systems of ventilation, I have endeavored to obtain the results of experiments and experience of men of undoubted authority, such as Prof. Pettenkofer, Dr. Grassi, Peclet, Morin, and many others.

While much ingenuity is exercised, and the means employed to accomplish ventilation are various, the systems upon which they are based are known first as that of natural or spontaneous ventilation; second, of ventilation by aspiration or extraction; and third, that of propulsion or mechanical ventilation.

Natural ventilation is based upon the difference of the outer and inner temperature, and consequently also upon density of the interior and exterior air. To produce a sufficient velocity in the evacuating and supply flues so as to insure an efficient renewal of the air, the difference of temperature must be considerable. The primary force which produces motion in spontaneous ventilation is the difference of specific gravity of two columns of air. In the same degree that this difference of temperature is lessened between the inner and outer air, the velocity of the current will be reduced. Should the exterior air be equal in temperature to that of the interior of a building, no movements of air will take place.

Degen (*Handbuch der Ventilation und Heizung*) states that by a difference of from 30° to 40° a sufficient ventilation may be secured; a result that may be obtained in winter, but not in the spring, summer, or fall. "In these seasons," the same author says, "the system of natural ventilation has been found to be insufficient; and if a constantly operative ventilation is required, it will be necessary to employ mechanical means to secure it." It seems necessary in these seasons to employ machinery to set the air in motion: the

opening of windows will not be sufficient. Pettenkofer found that through a window-opening of 9½ square feet, a supply of only 14 cubic mètres of air was received during one hour, and by the entire open space of an ordinary window, the requisite quantity for two persons only could be obtained (60 cubic mètres per hour being considered necessary for one person). To demonstrate how variable the results are of natural ventilation, I need only refer to some of the experiments of Dr. Pettenkofer made during the months of March, October, and December. At 19 different trials he found the changes of air in the same room, of which he was the only occupant, to vary from 69.3 to 1009.8 cubic feet. In the former case there was no difference between the exterior and interior temperature, while in the latter the difference was 19°. In addition to the above Pettenkofer made 220 experiments in the Lying-in and in the General Hospitals at Munich, by request of the Bavarian Government. The ventilation of these buildings was based upon the natural system: he found during 100 experiments that it was entirely inoperative, and during 100 other experiments the action in the flues was the reverse of that which it was intended they should have.

This then seems to demonstrate the insufficiency of the system where a permanently active change and an unvarying supply of air are required, as in hospitals, asylums, prisons, schools, etc. In connection with this system, I wish to add yet that the velocity of the current of the exterior air exerts a marked influence upon the ventilation of a building, as it has been found that much more fuel and heat is required when it is cold and windy, than during calm cold weather.

The second system is that of aspiration or extraction. This system has perhaps nowhere had a fairer trial than at the Hospital La-Riboisière at Paris. This hospital was completed in 1854. The authorities, being very desirous that it should be well heated and ventilated, prepared a programme containing the conditions which should be fulfilled by proposals which were to be invited. The programme according to Dr. Grassi (*Étude comparative des Deux Systèmes de Chauffage et de Ventilation établis à l'Hôpital La-Riboisière*), contains the following thirteen conditions: —

1. A constant temperature of 15° in the wards during the whole year by day and night.
2. A temperature of 15° during the whole year, in the daytime only, in the offices and rooms.
3. A temperature of 10° the whole year by day and by night on the stairs of the pavilions of the sick.
4. A constantly operative ventilation by warm air in winter and by cold air in the warm season: the supply of fresh air to be at least 20 cubic mètres per hour and per bed in the wards.
5. A ventilation during the daytime only, of 10 cubic mètres per bed in the private rooms of each pavilion.
6. A ventilation in the water-closets sufficient to prevent under all circumstances the development of bad odors, and without creating currents which might prove injurious to the patients.
7. The ventilating apparatus to possess a surplus of power sufficient to produce in some or all of the wards, twice the amount of ventilation before prescribed, in case it should be found necessary during a great epidemic to increase the number of beds.
8. The ingress openings of the fresh-air flues to be of sufficient transverse section to admit the air into the wards with but little current and at a temperature not exceeding 70°.
9. The air must enter the wards in the requisite degree of moisture, susceptible however of being changed at pleasure.
10. An especial contrivance for cooling the air artificially when necessary during seasons of great heat.
11. The apparatus for the general heating, or special apparatus, to furnish a sufficient quantity of warm water to answer all requirements of the wards, and to maintain an efficient temperature in the hot-closets of the ward kitchens.
12. In every kitchen of the basements, either in connection with the warming apparatus of the kitchens of the upper stories or separately, provision must be made for maintaining an active fire.
13. The heating and ventilating apparatus to be contrived so as to admit of being gradually put in operation in all parts of, or to be discontinued in any portion of, the buildings; besides, the apparatus must permit the lowering or raising of temperature of the wards.

A commission composed of scientific men of accepted authority, and presided over by the well-known physicist and chemist Régnault, examined the various proposed plans and methods, and decided in favor of forced or fan ventilation, as proposed by Thomas and Laurens of London. This decision created a general dissatisfaction and strong opposition. This method had not been in use in Paris. The system of aspiration so well contrived by Léon Duvoir had produced favorable though not entirely satisfactory results; but its advocates so strongly attacked the decision of the commission, that a second one was formed, composed mostly of architects under the presidency of Gen. Morin. The latter made the proposition, assented to by his associates, to heat one half of the number of pavilions by the system of aspiration as proposed by Léon Duvoir, and the other half by the system of propulsion as proposed by Thomas and Laurens. The demand upon the ventilation was increased from 20 to 60 cubic mètres per hour and bed for both systems.

It has been conceded that the operation of these two systems was investigated in a most thoroughly scientific and impartial manner by Dr. Grassi during a period of two years. In the experiments of the system of aspiration he put to himself several questions which in the opinion of Pettenkofer were answered with scientific precision. Among these were first: Is the amount of air which passes through the extracting chimney equal to the amount of fresh air supplied by the flues intended for this purpose? By measuring with the anemometer he found that 93 cubic mètres of foul air passed through the chimney per hour and per bed, while only 31 cubic mètres of fresh air came in during the same time through the fresh-air flues instead of 60 cubic mètres as prescribed, and the difference of quantity was supplied by the doors and windows.

Dr. Grassi found during various experiments an analogous result. Question second: Is the system of aspiration uniform during the entire year?

The result of his experiments obliged him to answer this question most decidedly in the negative. The motive power being the difference of temperature of the extracting chimney and that of the open air, and as this difference was at times more, and at other times less, so also he found the ventilation to vary. Consequently the system of aspiration was declared by Dr. Grassi to be faulty and insufficient.

In connection with the system of aspiration the construction of the ventilating shafts, flues, and chimneys is of great importance. I have learned by experience that it is not sufficiently observed by people who have such matters in charge, whether the movements of air are produced by static pressure or by suction.

It is ultimately the general pressure of the atmosphere which produces the movements of air, whether in consequence of the disturbed equilibrium, or by a vacuum created by suction. A chimney-flue does not act as a bellows; and the general expression "suction of the air" by means of a chimney, shows most unmistakably the erroneous conception of aërostatic laws by laymen in physics. Physicists have furnished the most decisive proofs that the so-called draught in a chimney is not produced by the tendency of the warmer columns of air to rise within it, but by the pressure of the colder lower strata of air; for the same reason that causes oil to rise in the water.

The third system, that of propulsion, being in use in the other half of the La-Riboisière Hospital buildings, was submitted to the same careful test by Dr. Grassi. While the programme demanded a supply of only 60 cubic mètres per hour and bed, he found that in the pavilion nearest the fan 132 cubic mètres were furnished per hour and bed, in the second 126 cubic mètres, in the third and last 88 cubic mètres were furnished, or an average supply of about double the quantity demanded.

Grassi tested also the barometric pressure of the air in the wards in comparison with that of the open air, and found the former less compressed than the latter, so that considerable additional air passed into the wards by the joints of the windows and doors. Notwithstanding the excessive supply of air, no draughts or unpleasant currents were perceptible a few feet from the openings.

It was also found that in the wards ventilated by this system the carbonic acid was only 11 per thousand, while in the former it was 2.5 per thousand of the volume of air.

Dr. Pettenkofer, who was commissioned by the Bavarian Government to examine the ventilation in use in the public buildings in Paris and London, has verified the conclusions of Dr. Grassi, and states in his report that the experience and tests made at La-Riboisière were perfectly convincing as to the superiority of the system of propulsion or mechanical force in ventilation, and recommends it as the only reliable method.

As it has been a point of considerable dispute and discussion, whether a fan should be placed so as to extract the foul air, or to force in the fresh air, Dr. Pettenkofer gives the results of experience as well as investigation of this matter at the Hospital Beaujon in Paris. Here the fan was originally placed in a chamber in which all the foul-air flues terminated, and contrived so as to extract the foul air, leaving the supply of fresh air to take care of itself. This however proved a complete failure, and it was found necessary to change the position of the fan, and reverse its operation so as to force in fresh air.

Dr. Pettenkofer closes his report with the opinion that the natural system of ventilation is irregular and accidental, and not to be recommended. As to the system of aspiration, he says that it cannot be denied that a good ventilation may be attained by it, but it is more or less irregular, and will vary with the difference of temperature in the extracting chimney and that of the open air. He refers to Peclet as having given the clearest and most convincing proofs of this in his report of the ventilation of Mazas Prison. He concludes by recommending forced ventilation as the only reliable method, inasmuch as the requirements of our lungs are constantly the same, that it is our duty to employ the means by which we will insure the supply of this demand. He says that it is of the utmost importance to furnish a sufficient supply of fresh air, and when this is done but little attention need be paid to the expulsion of the foul air.

Peclet, who devoted a lifetime to the study of physical science, who has sometimes been called the father of the new science of

applied physics, and whose works are perhaps the most authentic on every thing that appertains to the phenomenon of heat, has expressed almost the same views as Dr. Pettenkofer. (The views of Peclet have been cited in Dr. Parke's "Practical Hygiene.")

Gen. Morin in his latest work upon heating and ventilation gives the results of investigations in these matters in several of the manufacturing establishments of Paris, where the atmospheric impurities produced were very great, "as showing that the recent trials seem to demonstrate that the system of ventilation by propulsion was the most effective." A German author in reviewing Gen. Morin's work, and noticing this passage says, "The advocates of this method could not desire a better method than this, as it comes from a hitherto most strenuous opponent of that system."

Dr. Seifert of Dresden, to whom was awarded the first prize by the Imperial Academy of Vienna for an essay on the construction of Asylums for Insane, and who visited the institutions of Germany, France, England, and other countries, arrived also at the conclusion that mechanical ventilation was the most perfect.

The convention of Superintendents of American Asylums for Insane declared by resolution in 1851, and re-affirmed the same in May, 1853, that forced ventilation or the use of a fan was the only method to be recommended for their institutions.

A number of eminent English authors have advocated the same method, and I might name yet a considerable number of authorities; but I trust I may have stated sufficient to elicit a profitable discussion of this subject.

THE ILLUSTRATIONS.

TRINITY CHURCH, BOSTON, MASS. MESSRS. GAMBRILL AND RICHARDSON, ARCHITECTS.

(57 Broadway, N.Y.)

THE new Trinity Church in Boston stands on the so-called Back Bay, a district entirely of made-land: in consequence, the foundations were unusually costly. The structure rests on 4,700 piles driven to a depth of 15 to 35 feet, and the foundation extends from the water-line to the sidewalk 13½ feet. The four piers which carry the tower are supported each on a solid pyramid of block granite from the water-line to the church floor, the four pyramids together containing about 40,000 cubic feet of masonry, all laid in Portland cement. The piers themselves are of cut granite, and the arches which carry the superstructure of brick in cement, tied with iron rods at the springing.

The general arrangement of the plan is suited to the shape and position of the lot, the church closing the vista of two important streets and having its longest frontage on a third, so that the central tower has the advantage of belonging equally to each elevation, and hence, so to speak, all the sides are fronts.

The floor of the church accommodates one thousand persons, and the three galleries, one in each transept and one across the west end of the nave over the vestibule, will seat 450 more, making the total seating-capacity 1,450; but some additional room can be had on occasion by putting seats in the north-east vestibule and the room above it, both of which open by wide arches into the auditorium. The chancel is furnished with stalls around the apse, the altar standing in the middle, with an aisle all around. The chancel floor is raised five steps, with an additional kneeling-step at the chancel rail. The organ occupies the room at the south side of the chancel, the manuals being in the transept gallery, or rather in a small special gallery opening out of it; and the choir will be placed near by.

The walls are faced with broken-range quarry-faced granite of a light salmon color and very fine grain, from Dedham. In places where large stones were required, the red granite from Westerly, R.I., was substituted for the Dedham, the latter not usually quarrying in pieces more than two feet in any dimention.

The belts, jambs, and cut-stone generally, are of brown freestone from Longmeadow, Mass., from two quarries; one, of very hard stone, being resorted to for lintels, steps, and other parts subject to special wear or strain. The tower roofs are covered with red tiles from Akron, Ohio; and the hip-rolls and crockets were executed by the Chicago Terra-Cotta Company. The vestibules and so-called "cloister" passage-way between the church and chapel are to be paved with encaustic tiles from Maubeuge, France. The windows now in the building are intended for temporary use only; most of them will be ultimately replaced by memorial windows, a large part of which are already in the hands of London and Paris artists.

All the interior is furnished in black walnut, the furniture, though massive in style, being enriched with carving.

The decoration of the church, to which more space may hereafter be devoted, has been intrusted to a distinguished artist, Mr. John LaFarge of Newport and New York, who has, by giving an important place in his scheme to figure-subjects, opened a new and interesting field for our future designers of monumental structures.

The plan of the church seems to be favorable for acoustic qualities, the semicircle of the apse re-enforcing the speaker's voice, and the galleries across the flat walls precluding any chance of echo.

The roof is furred so as to form a kind of cradle vault, but of a trefoil section, the tie-beams of the trusses crossing the trefoils at the cusps. The lower part is therefore furred out from the wall, the windows rising above the spring of the arch and forming lunettes. The same treatment continues around the chancel. A font of marble and alabaster presented to the church stands in the chancel.

The church has been some four years in building; and it is worthy of notice that after a contract of nearly three years and a half duration, the building was delivered to the society on the appointed day.

IRON STAIRS. N. POULSON.

(Peck Slip Iron Foundry, 130, 132, and 134 First Street, Brooklyn, E.D., N.Y.)

Fig. 1. Circular stairs with cast-iron or slate tread. Fig. 2. Twin stairs for library, office, attic, roof, cellar, etc.: they only occupy half the space of ordinary stairs, and will serve as substitute for small circular stairs, as they are much more pleasant to ascend, and can be made at less cost. Where the height is not too great, the whole (without the hand-rail) can be cast in one piece. All the risers except the first and last are made twice the usual height. Figs. 3 and 4. Stairs with iron strings, risers, and balusters, hand-rail of hard wood, treads of slate or marble, or cast-iron treads made to receive ornamental tile, cement, or wood; the treads of stairs can be made of the same material as the floor and platform, so as to correspond with them and still be kept fire-proof; all treads are so constructed as to be easily replaced when worn out. The balusters and ornaments may be japanned instead of painted; and in many cases bronze electrotype medallions, panel ornaments, &c., can be used without much additional cost. Stairs like Figs. 3 and 4 can be built of iron at a cost not much exceeding those built of hard wood.

UNITED STATES COURT-HOUSE AND POST-OFFICE, LITTLE ROCK, ARK. MR. JAMES G. HILL, SUPERVISING ARCHITECT OF THE TREASURY DEPARTMENT.

Congress has extended the limit placed upon the cost of this building to $100,000.

AMERICAN INSTITUTE OF ARCHITECTS.

BOARD OF TRUSTEES.

MEETING held at the Institute rooms on Thursday, Jan. 18, 1877, at two P.M.

. . . . . .

The Secretary presented letters from Toronto and Hamilton in Canada, in relation to the formation of architectural societies, and was directed to correspond with such inquirers in his discretion.

The Secretary presented several letters in reference to architects' claims under the lien law, and was directed to communicate with the Chapters collectively as well as with each professional member of the Institute individually, with a view to obtaining all the information possible as to adjudicated cases, bearing on the emoluments of architects, through the operation of lien laws or otherwise.

. . . . . .

The question of quarterly meetings of the Board for the current year, referred to this meeting from the last one, being taken up, it was on motion of Mr. Walter,

Resolved, that quarterly meetings of the Board of Trustees be held at the rooms of the Institute on the first Thursday of March, June, September, and December, at two P. M.

. . . . . .

Mr. Pfeiffer moved that the Secretary be directed to request each Chapter to prepare for the next convention of the Institute a paper on the building-materials of its section. Carried.

The Secretary was directed to write to the Bureau of Topographical Engineers for public documents relating to architecture and engineering, for the use of the Institute.

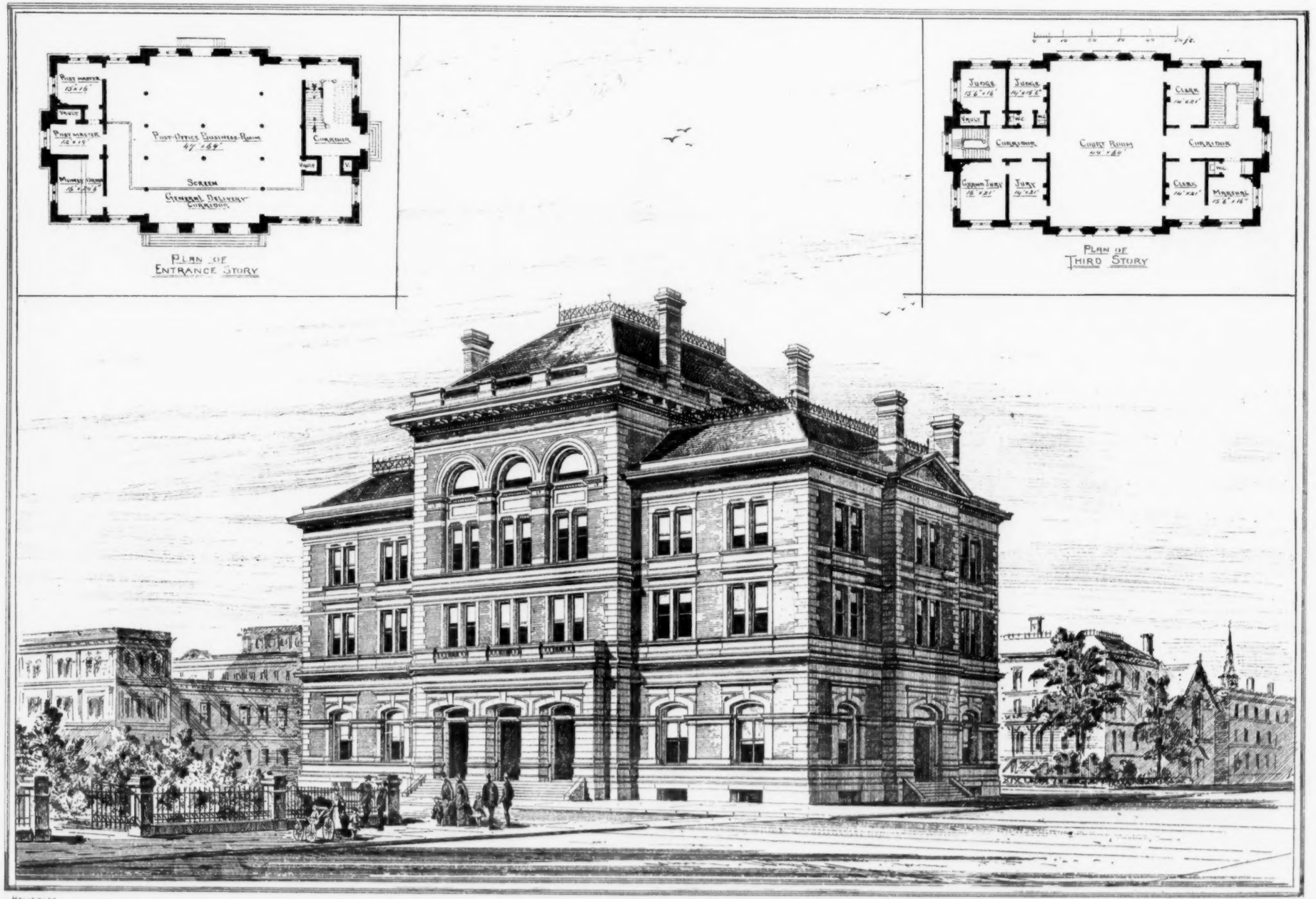
The meeting then adjourned.

PRISON CONSTRUCTION.

WE have received a volume of some eighty pages, with numerous illustrations, upon prison construction as patented by James B. Cook, architect, and James W. Heath, engineer, of Memphis, Tenn.

Their inventions consists in the method of construction of prison-cells, in the application of cast iron to this purpose, and in the expedient of surrounding the cells of a prison with sand or other mobile filling, with which is connected an automatic alarm system. They claim that by their system of construction, their cells may be used in an inexpensive brick building, and yet possess the necessary security. Their plan of a county jail represents a simple two-story brick building, the first story of which is occupied by the jailer and his family. The cells are placed in the second story along the two sides, with a common passage between them, each cell having a window to the open air. The cells are supported upon a solid floor of wood joists laid side by side, and resting upon the walls and partitions of the first story. Their patents include three forms of construction. For station-houses, insane-asylums, etc., where great security is not required, the cells are built up of

American Architect and Building News. Feb. 3. 1877



PLAN OF ENTRANCE STORY

PLAN OF THIRD STORY

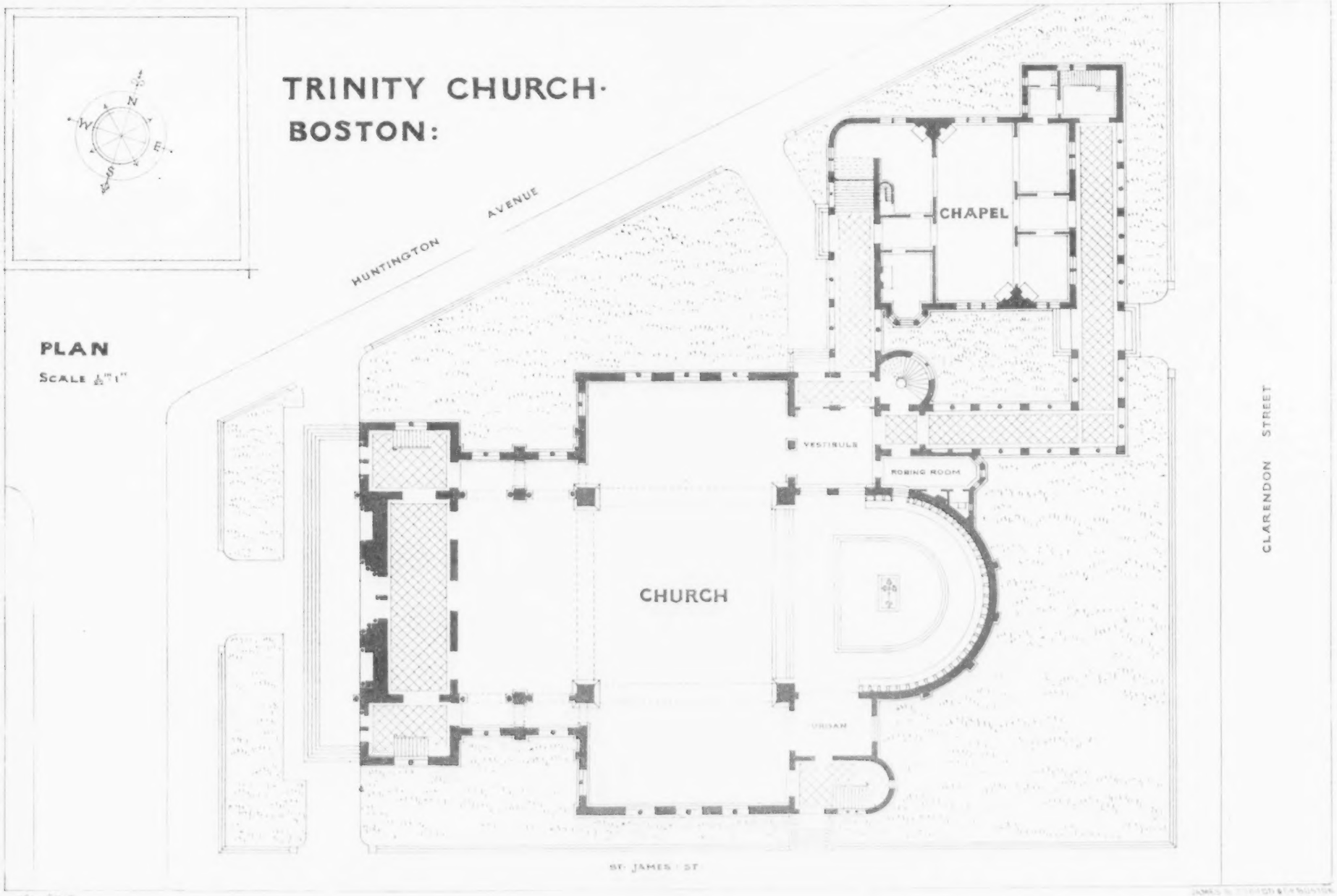
HELIOTYPE

JAMES R. OSGOOD & CO. BOSTON.

U.S.P.O. AND COURTHOUSE, AT LITTLE ROCK.

J.G. HILL, ARCHT.

TRINITY CHURCH· BOSTON:



PLAN

SCALE 1/8" 1'

TRINITY CHURCH, BOSTON, MASS.—GAMBRILL & RICHARDSON, ARCHITECTS.

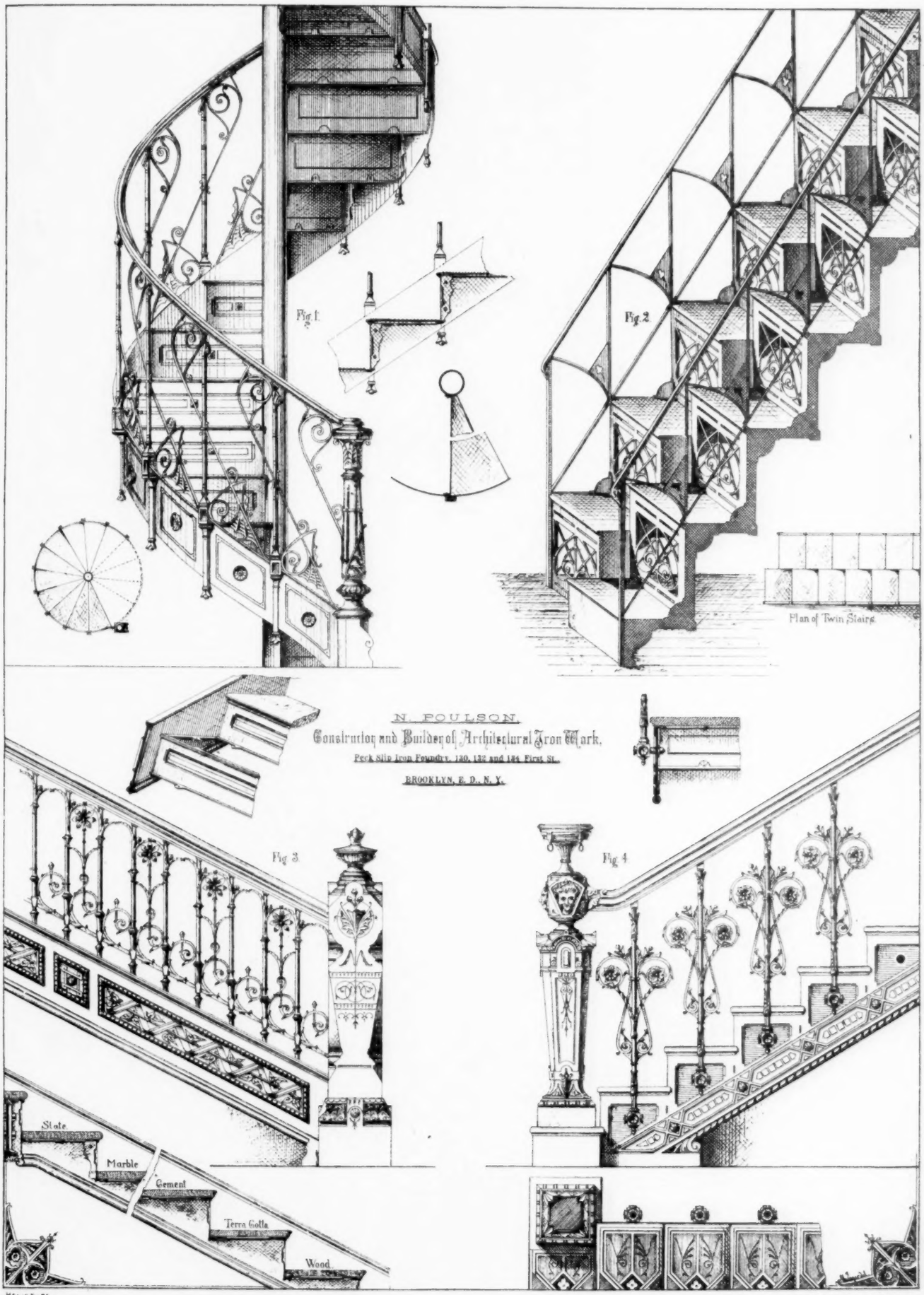


Fig 1.
Fig 2.
Plan of Twin Stairs.
N. POULSON.
Constructor and Builder of Architectural Iron Work.
Peck Slip Iron Foundry, 130, 132 and 134 First St.
BROOKLYN, E. D., N. Y.
Fig 3.
Fig 4.
Slate.
Marble.
Cement.
Terra Cotta.
Wood.

HELIOTYPE

several thicknesses of oak or other hard wood plank, put together in layers, crossing each other and spiked with wrought nails. For these cells they use their patent cast-iron doors and window-guards, set in cast-iron frames. We think the use of wood in prison construction is a great mistake; nothing that will burn should be used. A prison-cell lined with plank in this way would soon become a nest for vermin, which the cracks and joints in the plank would make it exceedingly difficult to prevent.

For small county jails where greater strength is required, in connection with this system of wood construction, the sides, ends, and top and bottom of the cells are lined with cast-iron plates one inch thick, two feet wide, and in lengths equal to the dimensions of the cells. These plates are ingeniously secured together by means of grooves and rebates made in the castings, so that each plate is let into and secured to its neighbor. Where bolts are necessary, they are used in flanges cast on the outside of the plates, and not accessible to prisoners from the inside of the cell. The window-frames are made very strong, and cast with grooves for the window-guards and with flanges to take the brick or stone work of the outside walls of the building, and the cell lining and wood backing on the inside. The door-frames are constructed in a similar manner; both are built into the cell construction as the work goes on. The window-guards are simply cast-iron plate tracery three inches thick, with openings or voids arranged in a geometrical pattern, and filling a little less than one-half the area of the window. The doors are similarly made of plates of cast iron, with openings at the top and bottom for the circulation of air. Lock sockets or bolsters are cast in the metal, in which the locks are secured. This is a precaution against jail raiders from outside the building, to prevent the locks from being taken off from the doors.

For larger jails and where greater security is required, Messrs. Cook and Heath have invented a very novel expedient indeed. They make their cells as before, but with an air-space all around, and at top and bottom some six or more inches in width. This space is filled with sand from above after the cells are set up. Over the top of the upper tier of cells is a hopper or bin, in which a supply of sand is placed. In some cases the space for sand-filling is formed by a double thickness of cast-iron plates all around the cells; in others the wood backing forms one side of this space. The object of this sand filling is twofold, — to astonish and perplex the jail-breaker with an avalanche of sand if he attempts to cut through his cell lining, and to set in motion an automatic system of alarm. This alarm consists of weights placed in and on the sand and connected with the jailer's office. The theory of the inventors is, that any attempt to cut through the walls of the prison will set the sand in motion, displace the weights, and sound an alarm. The prisoner in spite of himself thus gives notice of his intention to leave.

This form of construction for small jails seems to us complicated and expensive; and we doubt whether it would prove very secure. Why should these cast-iron cells be built in the second story of a building upon a wooden floor, and be strengthened and backed with wooden bulk-heading? Why not rather put the cells in a wing of the building upon a solid support of brick or stone, and fill in and back up the ironwork with brickwork? The cells would be easier to build, quite as strong, and we think cheaper. As to the security of these cells, built with windows to the open air, we are sceptical.

Jail-breaking has been developed into an art. Messrs. Cook and Heath give Boston the credit of an association of thieves and jail-breakers devoted to the study of this subject. With the clever tools which have been contrived for the purpose, a prisoner could in a few hours drill and cut out a section from one of the cast-iron window-guards large enough to let him out. Let us suppose, however, that the window guards are made of chilled iron or some combination of metals which is drill-proof; the prisoner would then probably attack the cell lining just under his window-sill, where there would be no pressure upon the sand. By drilling a few holes close up under the sill, and by injecting a little water, the sand would be rendered sufficiently stable for his purpose. By cutting out a piece of the cast-iron plate here, he has then only to go through the wood backing and the brick wall, and he is out. It is assumed that the prisoners are not able to get the proper tools. They do nevertheless get all sorts of tools, in spite of the care and vigilance of the officers. We have seen a collection of large and formidable tools taken from the prisoners of the Massachusetts State Prison, such as saws, files, drills, jack-screws, iron bars, and the like.

If this system of construction were applied to large penitentiaries upon the Auburn plan, with three or four stories of interior cells, it would, we think, be complicated and expensive. In the absence of data we can only judge of the cost of this kind of work by the Shelby County Jail of Tennessee, built by Mr. Cook. The jail contains eighty cells, five feet by seven feet, and eight feet high. The total cost of the building was two hundred and sixty-four thousand dollars, — or three thousand three hundred dollars per cell. We think this is a high price.

Messrs. Cook and Heath also claim patents for the construction of safe deposit vaults upon their system, depending largely upon their automatic alarm for safety, which in such cases is worked by electric attachments.

We think an expert burglar would make short work of the cast-iron plates; and the use of water and any of the refrigerating mixtures would probably render the sand quiet. We commend the study of the use of welded steel and iron in plates and bars as a much stronger material for this sort of work. Since, however, the inventions are actually in use, experience will be the best test of their value. It will be interesting to learn how secure they prove in practice; they certainly are ingenious.

CATHEDRAL OF STS. PETER AND PAUL.

24 PARK PLACE, NEW YORK.

TO THE EDITOR OF THE AMERICAN ARCHITECT AND BUILDING NEWS.

Dear Sir, — I was much surprised at the communication of your anonymous correspondent "M." from Philadelphia, which you published in your last number. His communication would imply that the design of the Cathedral of Sts. Peter and Paul in Philadelphia was due to the late John Notman, and that I merely "completed the interior and dome in consequence of a disagreement between him and his clients."

This is altogether a distorted perversion of facts. The actual plan of the building, with the omission of an apsidal termination to nave and transepts (unfortunately never constructed), is identical with my original design made in 1846, — in September of which year I supervised the laying of the corner-stone, and continued to direct the work until 1851.

A disagreement between myself and clients then caused a suspension of my connection with the building for several years, during which time the present façade was erected (and very poorly too, as numerous fissures testify) according to an amended design by Mr. John Notman. This was his sole connection with the work.

Upon the dismissal of Mr. Notman in 1857, when the walls of the balance of the building — continued under the supervision of a man whose name I do not recall — were not yet brought up to the roof level, I was engaged to resume charge of the work, and carried it to completion in 1864, entirely according to my own designs and original plan, as any Philadelphian professing to be conversant with the matter should know.

Very truly yours, N. LE BRUN, *Architect.*

THE DRAINAGE OF COUNTRY HOUSES.

TO THE EDITOR OF THE AMERICAN ARCHITECT AND BUILDING NEWS.

Dear Sir, — The communications printed in recent issues of your journal, from Mr. George E. Waring, jun., and Mr. Henry R. Towne, discussing the drainage of houses on level ground, have raised a question of great interest, and I ask permission to say a few words on the same subject.

There are situations and conditions which render practicable the system of house-drainage preferred by Col. Waring, which disposes of the liquid waste of the house by means of flush-tanks, settling cisterns, and irrigation-pipes. I have employed this system, somewhat modified, in draining my own country house, which stands on high ground, and has a sloping lawn of more than a hundred feet width, in the best position for the accommodation of irrigation pipes. I do not believe, however, that the system is one which admits of general adoption, nor one which will meet the requirements of most householders living within the narrow limits of town or village lots. Even where practicable, it does not seem to me to possess the theoretical excellence which is claimed for it. In summer, when evaporation is rapid and vegetation active, it is possible that the organic matter in the waste of a house would be taken up and assimilated by plants as rapidly as it could decompose in the soil; but I am not quite sure that even this is true in all soils. I have watched very carefully the workings of the system in my own grounds; and while the lines of drain-pipe are laid within eighteen inches of the surface, which is quite even, I have failed to discover any indications of a more rapid or luxuriant growth of grass or weeds near the pipes than remote from them. If, however, it be conceded that the system works well in summer under average conditions, I fail to see that my buried pipes are much if any better than a leaching cesspool during the winter months, when the ground is frozen and vegetation dormant. During this time the ground surrounding, and particularly that underlying the pipes, becomes charged with impurities which it cannot dispose of in a legitimate way. Long before they can be appropriated by growing plants, thawing snows and heavy soaking rains carry these impurities deep into the soil where the plants cannot reach them. In a light porous soil, there is nothing to hinder these accumulations of six or seven months of each year from working down until the soil is saturated and our own or our neighbors' wells polluted. We have, in the Northern States, only about five months of warm "growing-weather;" and in my judgment, draining into the soil during the other seven months means pollution of the soil.

From a careful study of the problem of house-drainage in unsewered neighborhoods, I am satisfied that the tight cesspool system is the only one which is practicable. I have many times

during the past few years had occasion to recommend a plan of drainage which has the advantage of adaptation to all the conditions I have yet encountered in practice. It is neither an invention nor a discovery; but in these matters, the attainment of good results is of much more consequence than novelty or ingenuity in the means employed. I contract with a responsible mason to build a cesspool as "tight as a bottle." The price depends somewhat upon circumstances; but as I select my mason, and give him to understand that he is to estimate honestly on the cost of first-class materials and workmanship, and not as a competitor for a contract to be given to the lowest bidder, the price is usually reasonable and the work always good. When there is plenty of room, I put the cesspool from fifty to sixty feet from the house; when the lot is small, I put it as far away as I can. In shape, the cesspool is much like an old-fashioned coffee-cup; its size, taking an average, is five feet diameter at top, and six feet deep. I cover this with a stout platform, removable at will, from the middle of which rises a wooden chimney ten or twelve inches square in cross section, and three to five feet high, capped with one of Mr. Baldwin Latham's charcoal ventilators, or with a device embodying the same principle. At one side of the platform I set a pump, — any one of several makes is adapted to the purpose, — and run the suction-pipe down to the bottom of the cesspool. This pump is a permanent fixture, and is always ready for use. The house connection is made in the usual way; but I have no traps at any point on the line of the main waste or soil pipe, or the house-drain proper. The soil-pipe is carried up of one size from the foundation wall to and through the roof. The branch waste-pipes are of course trapped; but I take the precaution to use traps which cannot lose their seals from any cause except evaporation. The danger to be apprehended from the absorption and transmission of cesspool gases by the water-seals of such traps is obviously very slight, at most. With the house-drainage system open at both ends, no accumulation of gases at any point where they can be held under pressure is possible.

When the cesspool is full, it can be emptied in any way most convenient. In a town or village where an odorless excavator can be ordered, it may be emptied by lifting out the ventilating chimney, and dropping the suction-pipe of the apparatus through the hole in the platform. If the householder must attend to the work himself, he can do it in one or two ways, according to circumstances. In summer, if he has a garden, he may employ it for surface-irrigation. He can make a trough by nailing two boards together at right angles, and, putting one end of this under the spout of his pump, let the other end rest where the water will do most good. By providing two or three such troughs, made of long boards, he can irrigate a garden of considerable extent, and as frequently as may be needed. The organic matter already partially decomposed will be at once taken up by the plants; and the water is quickly absorbed by the dry surface soil, to be given off again in evaporation. In the winter, or in places where irrigation is not needed for the fertilization of a well-kept garden, the contents of the cesspool must be pumped into tight vessels of some sort, and carted away. A short piece of rubber tubing attached to the spout of the pumps, and half a dozen kerosene-barrels with tight-fitting bungs, will give the householder an odorless excavator of his own.

Concerning the views expressed by my very intelligent friend Mr. Towne, I can only say that, in my judgment, the leaching cesspool system is the worst which can be employed under any circumstances. I lately visited a town in which this system is carried out *par excellence*. The town is built upon a limestone formation, which is full of cracks and fissures; and, to dispose of any thing in the shape of waste, it is only necessary to dig down twenty or thirty feet, until the limestone is reached. Even privy-vaults empty themselves. The town has a water-supply drawn from sources not reached by the pollution of the soil; but within three years it has had two epidemics of typhoid fever, and is never free from sickness of unmistakably zymotic origin. We must not forget that, in pouring sewage into the soil, we are poisoning it for the future, near and remote. Coming generations will suffer, even if we do not, the consequences of so reckless a disregard of the precautions which the experience of centuries has shown to be essential to the avoidance of conditions prejudicial to the public health.

Respectfully,

NEW YORK, Jan. 22, 1877. JAMES C. BAYLES.

RENDERING STONE WALLS WATER-PROOF.

PROVIDENCE, R.I.

EDITOR AMERICAN ARCHITECT.

The recipe for preventing the penetration of moisture into brick or stone walls, given in your issue for Jan. 20, has been several times published in the London *Builder*. It was also published in 1860 in the *Architects' and Mechanics' Journal* of New York, in a slip quoted from the *Builder*, as described before the Royal Institute of Architects. The same slip gives another method by the use of sulphurized oil, prepared by subjecting eight parts of linseed oil and one part of sulphur to a temperature of 278° in an iron vessel. This is said to keep out both air and moisture, and to prevent deposits of soot and dirt, when applied with a brush to the surface of either brick, stone, or wood work. It would be valuable to know if either has been tried in this country, and found to be a permanent and effectual preventive.

Yours respectfully, C. P. H.

VENTILATING AND HEATING SCHOOLHOUSES.

TRAVERSE CITY, MICH., Jan. 25, 1877.

TO THE EDITOR OF THE AMERICAN ARCHITECT AND BUILDING NEWS.

Dear Sir, — I am getting up plans for a new schoolhouse for our town, and am very desirous of obtaining information with regard to the best furnace now in use, and the expense of the same, and also what is the most approved and effectual mode of ventilating large schoolrooms or other assembly-rooms. Will you please inform me through the *Architect*, what is the best furnace in use, and the best system of ventilating?

Yours respectfully, JOHN W. HILTON.

TRUSSES.

ILLINOIS INDUSTRIAL UNIVERSITY.

Dear Sir, — Allow me to suggest, that the "strains do not accumulate in the end braces of the parabolic, crescent parabolic, or the Pauli truss, the strains being in fact greatest in these braces nearer the centre. The strains in the chords are nearly uniform also, being a little greater at ends of truss on upper chord. For a "deck" bridge like that at Ashtabula the reversed parabolic truss could have been used without difficulty. The parabolic truss is used in the long bridge over the Elbe on the Berlin-Stendal Railway, I believe, but I do not recollect seeing it employed in this country. Yours truly, N. CLIFFORD RICKER.

A JOURNEY OF AN ARCHITECT IN THE NORTH-WEST OF EUROPE. — III.

HOW CORNERS ARE TREATED AT HANOVER.

ONE of the most important questions to be solved in a new city, when once the general outline is adopted and the plan laid down,[1] is the study of the angles formed by the meeting of two streets. In certain towns, as at Turin, for example, which is the perfect image of a draught-board, no particular arrangement is necessary. In Paris, we see the houses at important angles, such as those which are at two cross-roads, distinguished from the rest by a special combination. Unfortunately, all the houses constructed under these conditions resemble each other so strongly, that it is not always easy to recognize them a second time.

At Hanover, the houses at the corners of a cross-road, or those fronting a square, are treated differently, according to the form of the site on which they are built, and the effect of perspective which they are intended to produce. When the disposition of the public road leaves a large vacant space before the building, the façade of such a house is treated otherwise than if it were built in a narrow road; and as, in spite of the width of the streets, the buildings which form them are relatively low, the system of ventilation is excellent. On a public promenade, or before a square, the look-out is skilfully arranged, so as to allow the inhabitants within the house to enjoy the prospect without. The windows have then a special form: they are wider and descend lower, and bay-windows are thrown out to enable persons to see what passes on every side.

A few sketches will illustrate what we have already said, and what is to follow.

Fig. 89 represents the front of a house, by Mons. Oppler, architect, built at the corner of two streets forming an acute angle with each other; the angular point is occupied by a bay-window of picturesque appearance; the two retreating fronts are much varied in their outlines, with very decided projections; their principal lines being also broken up by buttresses and gables, as well as by many recessed and prominent portions, the whole, from a front view, would have a heavy appearance, but seen sideways it is foreshortened, and a lighter effect is produced by the contrast of light and shade which soften down the details.

At an obtuse angle, on the contrary, the façades are thrown forward, and may be taken in at a single glance. There would be, in such a case, some fear of the monotony resulting from a long line of similar openings; in order to obviate this inconvenience, the façade is unequally divided, and the principal part projects beyond the wings. The lower lines extend regularly along the building, passing over the projecting portions, and thus producing a good effect; while in the wings there are the divisions with their projections. The stories vary in height, according to their importance and the part which they are intended to play; and in the thickness of the walls there are recessed balconies, surmounted by large arches, which extend over the windows on two floors. The whole is very subdued, and does not aim at effect so much as the

[1] In order to discuss the plan of Hanover, it would be necessary to have a knowledge of the local topography, which we do not possess; and we must therefore consider this plan a good one until the contrary is proved.

preceding example, where the attention is arrested by each separate point; while here, on the contrary, the mass of the work was of sufficient importance to make it necessary to divide it, so as to allow the spectator easily to take in the whole effect from one ex-

Fig. 89.

tremity to the other, and, by means of breaks and intervals skilfully interposed, to diminish the extent on which the eye would have to rest.

A building erected in a square (fig. 91) by Mons. Oppler, the architect, resembles in many respects the preceding structure; but with this difference, that the principal projection is more prominent, and assumes the proportions of an important decoration. The wings are relatively sacrificed to it, and throw into relief the middle of the building, which is treated in a more elaborate style, and differs from the rest both in form and the nature of materials. It is evident that a square surrounded by buildings with such outlines as these looks brighter and more cheerful than if the houses were uniform in appearance and height. It may indeed be replied that the latter plan — adopted, for example, in our Place Vendôme

Fig. 91.

and Place Royale, etc. — gives to them, according to academic conventionalities, a grander and more monumental aspect.

When a house is to be erected at a corner formed by the intersection of two or more cross-streets of secondary importance, the plan adopted is less rich, but the result obtained is always original, picturesque, and remarkably varied. We see that the architect has endeavored to produce a good effect with regard to perspective, and an outline which is striking at a distance.

Fig. 92 represents a small corner-house: it is distinguishable at

Fig. 92.

a distance, and cannot be confounded with the neighboring houses; the angle, being cut off, is superseded by a plane surface supported by a small column rising to the level of the ceiling of the first floor, and sustaining the balconies of the upper stories; and the whole arrangement carries out an ingenious idea, the conception of which is analogous with those to which we have already alluded, the principal aim being to attract attention to one special point, throwing into the background the other portions of the frontage, which are to some extent sacrificed.

These examples are only intended by us to explain the principal combinations adopted in the façades of Hanover. As to the use which the builder has made of the materials employed, and the arrangement of the ground-plan, these are questions which will occur hereafter, when we come to examine the interior of these dwelling-houses.

We will merely remark here that the houses to which we have just alluded are built, some entirely of bricks, and others of white stone and brick; that these bricks are of various colors, yellow, red, or black; that their form varies, as we have already shown; and that, according to the manner in which they are employed, they are well adapted to imbricated work of every kind, thus giving to the façades an appearance entirely new to us. We also feel assured that the inhabitants must find in the interior of their dwellings an enjoyment as great as the exterior produces on the passer-by. We can easily imagine what a charm must be added to an apartment by a bay-window filled with flowers, well exposed to the sun, with an extensive view, which diffuses animation and cheerfulness over the whole room.

We may also remark that these are not peculiarly luxurious houses or sumptuous mansions, but lodging-houses intended to be used by several lodgers; the ground-floor containing shops, and the upper stories the ordinary apartments.

ARCHITECTURAL DRAWINGS BY RAPHAEL. — Three unpublished architectural designs by Raphael were lately discovered in the architectural collection at the Uffizi, Florence.

NOTES AND CLIPPINGS.

As we go to press, it is announced in the papers that the Strakosch Opera project, to which we have referred in our summary, has fallen through in consequence of the failure of negotiations with Mr. Vanderbilt for the land. It remains to be seen whether the elasticity of the projector will be sufficient to raise it into notice again.

OBITUARY. — At the regular meeting of the Chicago Chapter of the American Institute of Architects, held Thursday, Jan. 18, after the announcement of the death of Asher Carter, a former active member of the Chapter, the following resolutions and memoir were unanimously adopted and ordered published in the *Engineering News*, *American Architect*, and the Chicago daily papers, and a copy of them to be sent to the widow of the deceased.

Resolved, That the Chicago Chapter of the American Institute of Architects does hereby extend its sympathy and deep regret to the relatives and friends of the late Asher Carter, and that by his death there has been removed one who has ever upheld the dignity and honor of the architectural profession, and who through his quiet and studious devotion to his professional duties has earned the honor and respect of his colleagues.

Resolved, That the Chicago Chapter, fully knowing the merits and noble qualities of the deceased, particularly extends its sympathies to the bereaved widow.

THE DOME OF THE COUNTY COURT-HOUSE, NEW YORK. — It is said that the original plan will not be carried out in the octagonal dome now in course of erection. Massive piers of brick have been built from the foundation, up through the first floor, and stand on each side of the four entrances to the rotunda, narrowing these wide approaches from a clear space of about twenty-four feet to ten feet, or about the width of the stairways. Above this floor, they are to be built of brick and Nova Scotia stone. All the floors above the first one are of iron, and through these the workmen will cut and build up to the roof; whence, on pillars supporting arches, the stonework will spring.

BURNING OF A THEATRE. — At about ten o'clock Saturday night, Jan. 27, a fire broke out in the Academy of Music at Indianapolis, Ind., destroying the entire building together with five stores. Fortunately no performance was in progress. The loss will probably amount to $150,000 or $200,000.

THE STATE HOUSE GROUNDS AT HARTFORD. — The Trinity College buildings on the grounds of the new State House at Hartford will be abandoned soon after the commencement exercises next summer, and will then be demolished, and the site cleared up and turfed to correspond with the other portions of the grounds.

A NEW BROOKLYN THEATRE. — It is reported that negotiations are now pending for the rebuilding of the Brooklyn Theatre. The entrance to the theatre is to be on Johnson Street (instead of Washington Street), about twenty-five feet in width. The theatre will seat about twelve hundred. The stage will be against the wall of the police-station, and will be one hundred feet wide. The owners of the theatre property intend to expend about eighty thousand dollars in the construction of the new edifice, and build it in a thoroughly substantial manner, with every appliance for egress in case of fire; and a fire-proof drop-curtain is to be provided.

A SECOND BRIDGE BETWEEN NEW YORK AND BROOKLYN. — Ten engineers have submitted designs and estimates for a bridge to connect New York and Brooklyn near Blackwell's Island. It is said that ground will be broken as soon as a plan shall be decided upon. The preliminary specifications call for an approach on the New York side of 4,580 feet, 1,000 feet of which is to be in form of a tunnel extending from Fourth to Lexington Avenues. From the end of the tunnel, an iron superstructure, curving to the centre of the blocks between Seventy-sixth and Seventy-seventh Streets, and thence direct, leads to the river. From the pier on the brink of the river, Blackwell's Island will be reached by a single span of 734 feet. An iron structure 700 feet long will then lead over Blackwell's Island; and the channel between the island and the Long Island shore will be spanned by a single arch of 618 feet. The shore approach on the Long Island side will be 3,900 feet in length. This will give in all a total length of 10,532 feet, or nearly two miles. A single track tramway will run across the bridge. There will be, in addition to the main approaches, two auxiliary ones; one from Avenue A on the New York side, and the other from Vernon Avenue, Long Island City. The spans are to be 135 feet above mean tide water. Double passenger elevators are to be placed at the piers on each side. A single arch of 618 feet span sounds rather magnificent, and almost impossible of accomplishment, when we consider that among the largest arches hitherto constructed, the Cabin John Bridge — circular — of the Washington Aqueduct measures only 220 feet, and London Bridge — elliptical — measures only 152 feet clear span. The suspension bridges at Niagara and at Freyburg, Switzerland, have each a clear span of 800 feet, or only a quarter more than the span of the proposed arch.

MUSEUM OF INDUSTRIAL ART. — New Haven, Conn., is to have a museum of industrial art. The articles already in possession of those who are interested in the enterprise are to be placed in the old State House.

THE CATHEDRAL OF RHEIMS. — The Cathedral of Rheims is to be restored at a cost of more than $400,000. It was begun in 1212 from designs by Robert de Courcy, and was finished about 1430. Its predecessor dated from the ninth century.

THE PERMANENT EXHIBITION. — The Permanent Exhibition at Philadelphia will open in April. In the centre of the building in the north gallery, will be placed the great Centennial organ, with an area sufficient for musical performances. The arrangement of the exhibits will be such as will bring similar articles of the same group in close proximity to each other, thus facilitating comparison and study. In the west wing on the north side, commencing at the west end, will be the following courts, in the order named: Norwegian, Swedish, Danish, Tunisian, Turkish, Spanish (agricultural), and Chinese. On the south side as follows: Egyptian and Spanish (industrial). In the east wing, on the north side: Japanese, French Crystal Court, Belgian, Swiss, Mexican, and the Brazilian Pavilion presented by his Majesty Dom Pedro II. The north-west section of the building will be devoted to agriculture, and in the south-west will be the machinery department. Arrangements have been made for a collective display of ceramics from different countries.

CLEOPATRA'S NEEDLE. — The *Pall Mall Gazette* says there is now a prospect that Cleopatra's Needle, which was given by Mehemet Ali to the British Government, and which has remained so long on the shore at Alexandria, will, before many months are over, be set up in London. The engineer who will have charge of the matter estimates the cost of moving it at $35,000.

THE ROYAL ALBERT HALL. — The Royal Albert Hall, London, which holds 7,000 people, can be emptied in less than seven minutes, as there is one door of exit for each 200 persons. On the roof there are twenty tanks, each containing 2,000 gallons of water, supplied from an artesian well at the back of the building; these if emptied can be refilled in twenty minutes. There is also a special high-pressure service surrounding the building, with six fire-plugs. All the fire appliances are inspected weekly by an inspector who is not one of the ordinary staff of employees of the building.

MODERN ANTIQUES. — Down among the potters in Lambeth a little story is told, which illustrates the manner in which modern antiques come to be heard of. A pottery lad found something that bore a faint resemblance to what might have been a drinking-vessel. He thought it was, and certainly it looked very old. Inquiry at the British Museum procured him no information regarding its age and value, but in lieu of it an offer of $1.87½, which he declined to accept, opining that his prize must be worth more than the nation would offer for it. He took his "find" to the overseer in his place of employ; and that clear-headed person quickly demonstrated that the piece was a common three-cent squat mug of yellow earthenware, broken and thrown aside, its sharp jagged edges softened down by the action of running water, and its color completely changed and destroyed by atmosphere and dirt; in fine, it was a bit of rubbish whose only use was, with other material of the kind, to make up a new roadway. The boy had been too anxious to trade, or the broken clay might perchance ere this have been described in the national catalogues and hand-books as one of those precious relics which prove that the conveniences of life were not unknown in Britain long ago, —

"When wild in woods the noble savage ran."

The loss to the nation in that instance was atoned for, however, by the gain of a distinguished public man and the country on another occasion. An eminent sculptor going to the South Kensington Museum, was much struck by a valuable antique which he saw in the loan collection of maiolica and Della Robbia ware. He remembered that when engaged in early professional life at the Staffordshire potteries, he modelled a statuette. It was flawed in firing, and at once condemned as "a waster;" and as the dealers in faulty ware would not have it at any price, it was painted over the back to conceal the fault, and then got rid of. Subsequently that statuette passed into the hands of a dealer who estimated it highly. By him it was sent for exhibition at a *conversazione* of the Fine Art Club; and after some higgling about price, it exchanged owners for $625, $750 having been first asked for it. Had it been a perfect copy it would have been sold in Staffordshire for $7.50; but the flaw deprived it of half its value. The sculptor easily identified his own work on seeing it at the Museum, not only by the design, but by the crack in and the paint on the back, and the painter who concealed the flaw from vulgar eyes is still living. Its latest possessor, despite the overwhelming evidence submitted to the contrary, was pleased still, however, to regard this work of art (in a double sense) as a genuine antique, far transcending the powers of any living sculptor, and wonderfully cheap at the price he paid for it. An ex-premier of England, who failed to dispose of his collection awhile since, could say who that refreshingly innocent and happy owner was.

THE HOME OF AN EARL. — The London *World* says the new mansion which the Earl of Ellesmere is building on his Northamptonshire estates is nearly completed, and, with the extensive stabling attached, will have cost by the time it is in occupation some $750,000. Being close to Brackley, Lord Ellesmere's seat is in the centre of a fine hunting district, and its erection has given a remarkable impetus to the picturesquely situated and old-fashioned town.

A PARIS CHURCH DAMAGED BY LIGHTNING. — The little Gothic church of Kernaschen in the commune of Saint-Carade-Tregomel, built by Alain de Rohan in the fifteenth century, was lately nearly totally destroyed by lightning. The steeple was struck and fell through the roof, crushing in its fall fretwork and pinnacles, and doing much damage to the sculpture in the interior.

MONUMENT TO LINNÆUS. — For the erection of a monument to Linnæus thirty-six thousand crowns have been subscribed. The monument will be erected in Stockholm, and will be unveiled on January 10, 1878, the hundredth anniversary of the death of the great naturalist.